



Electrofuels

ARPA-E is seeking new ways to make liquid transportation fuels - without using petroleum or biomass - by using microorganisms to harness chemical or electrical energy to convert carbon dioxide into liquid fuels. Many methods of producing advanced and cellulosic biofuels are under development to lessen our dependence on petroleum and lower carbon emissions. Most of the methods currently under development involve converting biomass or waste, while there are also approaches to directly produce liquid transportation fuels from sunlight and carbon dioxide. Although photosynthetic routes show promise, overall efficiencies remain low.

The objective of this topic is to develop an entirely new paradigm for the production of liquid fuels that could overcome the challenges associated with current technologies.

ARPA-E requests innovative proposals which can overcome these challenges through the utilization of metabolic engineering and synthetic biological approaches for the efficient conversion of carbon dioxide to liquid transportation fuels.

ARPA-E specifically seeks the development of organisms capable of extracting energy from hydrogen, from reduced earth-abundant metal ions, from robust, inexpensive, readily available organic redox active species, or directly from electric current.

Theoretically such an approach could be 10 times more efficient than current photosynthetic-biomass approaches to liquid fuel production.

Timeline

- Secretary Steven Chu announced the funding opportunity on December 7, 2009.
- Vice President Biden announced the award selections on April 29, 2010.

Project stats

- 13 projects, totaling \$44.5 Million
- Complete descriptions can be found at:
 - <http://arpa-e.energy.gov/ProgramsProjects/Electrofuels.aspx>

Program Director

- Dr. Eric Toone

